

DTCH4003

0.01 TO 4.0 GHz THRESHOLD DETECTOR

Typical Values @ +25 °C

DTCH4003

Wide Frequency Range	0.01 to 4.0 GHz
Wide Power Range	-10.0 to 20.0 dBm
Temperature Stability	± 0.20 dB
Power Flatness	± 0.50 dB
Single Power Supply	
Tall TO8H Package	

SPECIFICATIONS*

Parameter	Typical	Guaranteed	
		0 to 50 °C	-55 to +85 °C
Frequency (Min.)	0.01-4.5 GHz	0.01-4.0 GHz	0.01-4.0 GHz
Input Power Range (Min.)	-10 to 20 dBm	— to — dBm	-5 to 20 dBm
VSWR (Max.)	1.2:1†	—:1†	1.8:1†
Sensitivity, Vout (Min.)	— mV†	— mV†	— mV†
Power Flatness (Max.)	±0.5 dB^	± dB^	±0.6 dB^
Temperature Stability (Max.)	±0.20 dB^	± dB^	±0.4 dB^
Output Offset Voltage, no RF (Max.)	+— mV	+— mV	+— mV
1 dB Square Law Departure	— dBm	—	—
Tangential Sensitivity	— dBm^^	—	—
Pulse Response, Pin = -15 dBm	1.5 µsec‡	—	—
Pulse Response, Pin = 5 dBm	— µsec‡	—	—
Max Output Voltage	— Volts	—	—
Supply Current, no RF	— +mA, — -mA	—	—
Supply Current, Pin = 5 dBm	3 +mA, 3 -mA	—	—

* 50-ohm source impedance, 2 KΩ||50 pF output load, +5 Vdc. † Pin = -15 dBm.

^ Vout = 100 mV. ^^ 3 dB NF, 1 MHz Bandwidth. ‡ 50% RF to 10 or 90% Video.

MAXIMUM RATINGS

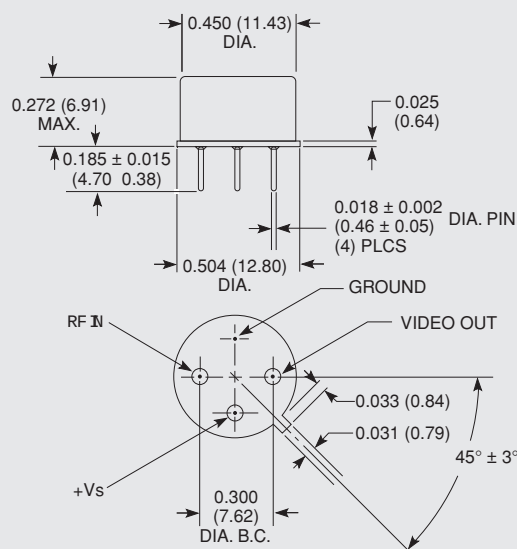
DC Voltage	+18 V
Continuous RF Input Power	+14.0 dBm
Operating Case Temperature	-55 °C to +100 °C
Storage Temperature	-65 °C to +125 °C
Burn-In Temperature	+100 °C
Detector Thermal Resistance ¹ (θjc)	3500 °C/Watt
Temperature Rise @ 0 dBm (Tjc)	3.5 °C
Temperature Rise @ 5 dBm (Tjc)	35 °C

APPLICATION NOTES

- ✦ This unit is DC coupled and employs a RF choke at the input (DC short). If the application calls for the input to sink current there will be approximately an additional 1 mV of output offset voltage for each 3 mA of current. Sink current should be limited to 100 mA max to avoid choke burnout.
- ✦ For higher supply voltages, up to ±15 volts, the positive supply pin must include a series current limiting resistor, $R_s = (V_s - 5) / 0.01$ (e.g., $V_s = +15V$, $R_s = 1.0KΩ$).
- ✦ Average power detection is obtained at power levels below approximately -13 dBm.
- ✦ For best pulse response the supply pins should be bypassed with an additional 1.0 µF capacitor. The unit contains 0.01 µF internal capacitors.
- ✦ Connect external threshold resistor from Rcntl port to ground.

DTCH4003

TO-8H Package for Threshold Detectors



DIMENSIONS ARE IN INCHES [MILLIMETERS]